



Medizinische Fakultät Heidelberg

Brief intro to Git(Hub)

Git(Hub)



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- Git is a **version control system**:
 - allows simultaneous work of different people on the same project
 - tracks the changes ('**commits**') made by each member
 - helps solve the **conflicts** between various versions
- GitHub is a platform which hosts Git projects ('repositories')
 - is free to use
 - required to create a (free) account
 - can be used in command line or using GUI tools ('GitHub Desktop')

Git repository

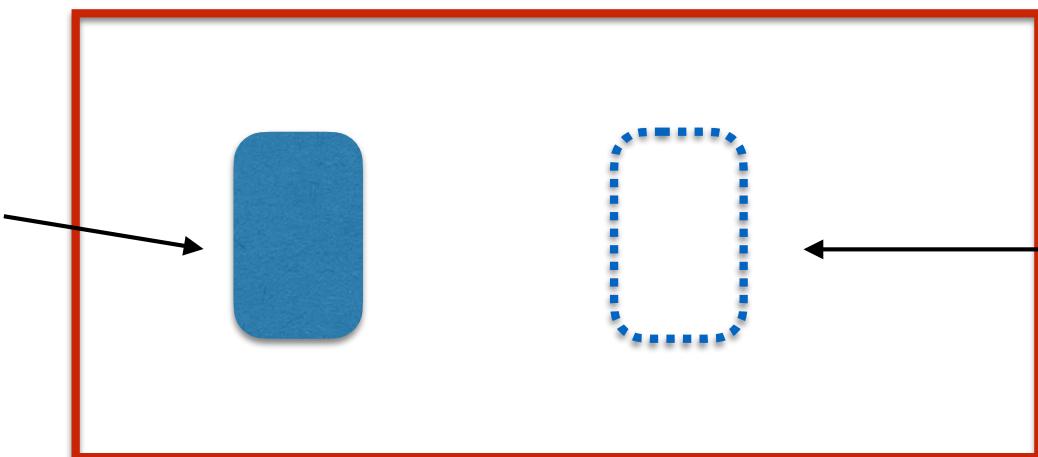


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repository

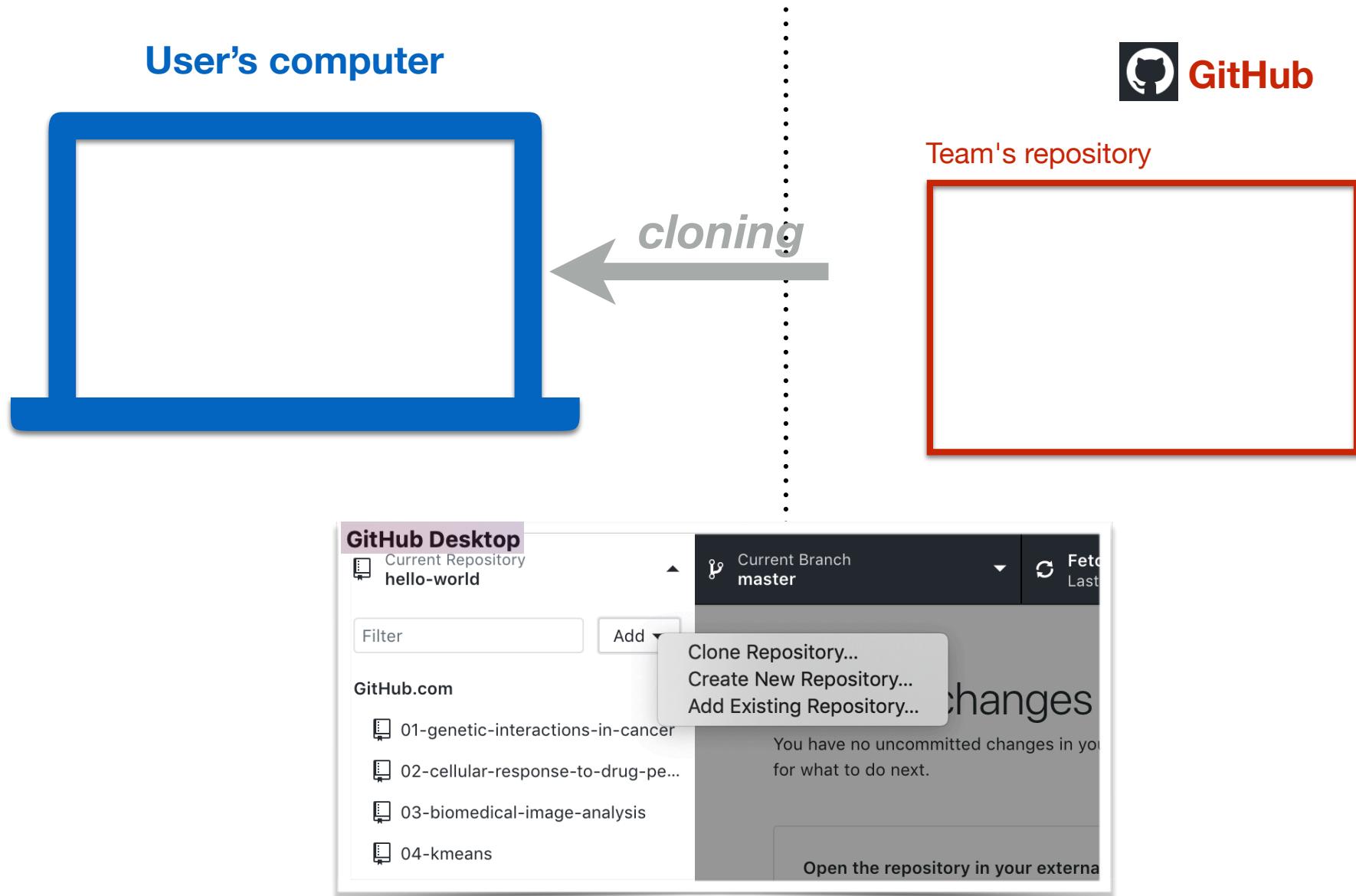


this file is registered
in the database
(‘committed’)



this file exists, but
has not been
registered yet
OR
the file has been modified, but
the changes have not been
registered yet

1. Cloning an existing repository





Current Repository **hello-world**

Current Branch **master**

Fetch origin
Last fetched 19 minutes ago

Changes History

0 changed files

No local changes

You have no uncommitted changes in your repository! Here are some friendly suggestions for what to do next.

Open the repository in your external editor
Configure which editor you wish to use in [preferences](#)

Repository menu or ⌘ ⌘ A

[Open in Visual Studio Code](#)

View the files in your repository in Finder
Repository menu or ⌘ ⌘ F

[Show in Finder](#)

Open the repository page on GitHub in your browser
Repository menu or ⌘ ⌘ G

[View on GitHub](#)

hd Summary (required)

Description

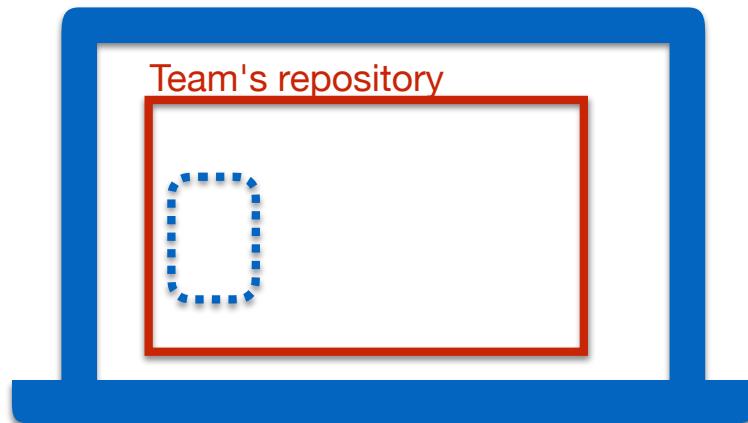
Commit to master

2. creating a local file



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User's computer



 GitHub

Team's repository



- When a new file is added / modified in the local folder, it is not yet registered in the git database!
- it first needs to be **committed**



lberg

Current Repository **hello-world** | Current Branch **master** | Fetch origin
Last fetched 22 minutes ago

Changes 1 History my_markdown.Rmd +

1 changed file
 my_markdown.Rmd +

new file created locally

```
@@ -0,0 +1,30 @@
1 +---
2 +title: "My first markdown"
3 +author: "Carl Herrmann"
4 +date: "4/23/2019"
5 +output: html_document
6 +---
7 +
8 +```{r setup, include=FALSE}
9 +knitr::opts_chunk$set(echo = TRUE)
10 +```
11 +
12 +## R Markdown
13 +
14 +This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.
15 +
16 +When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:
17 +
18 +```{r cars}
19 +summary(cars)
20 +```
21 +
22 +## Including Plots
23 +
24 +You can also embed plots, for example:
```

hd Create my_markdown.Rmd

Description

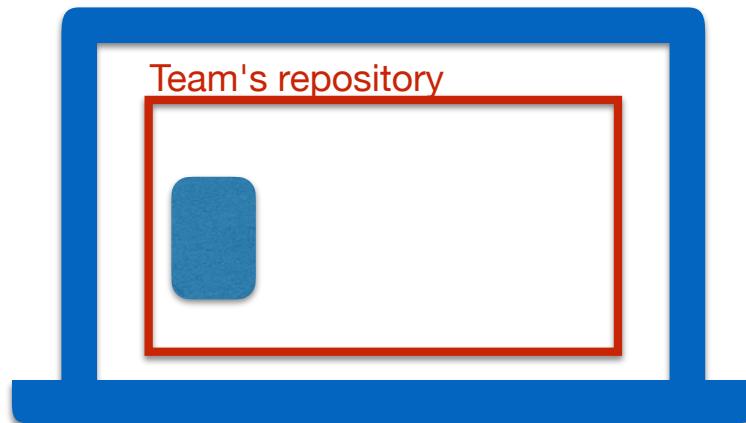
Commit to master

2. Adding a file



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User's computer



Team's repository



- When a new file is added / modified in the local folder, it is not yet registered in the git database!
- it first needs to be **committed**



Current Repository **hello-world** | Current Branch **master** | Fetch origin
Last fetched 22 minutes ago

Changes 1 History my_markdown.Rmd

1 changed file my_markdown.Rmd

```
@@ -0,0 +1,30 @@
1 +---
2 +title: "My first markdown"
3 +author: "Carl Herrmann"
4 +date: "4/23/2019"
5 +output: html_document
6 +---
7 +
8 +```{r setup, include=FALSE}
9 +knitr::opts_chunk$set(echo = TRUE)
10 +```
11 +
12 +## R Markdown
13 +
14 +This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.
15 +
16 +When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:
17 +
18 +```{r cars}
19 +summary(cars)
20 +```
21 +
22 +## Including Plots
23 +
24 +You can also embed plots, for example:
```

indicate the type of changes made and commit

Create my_markdown.Rmd

Description

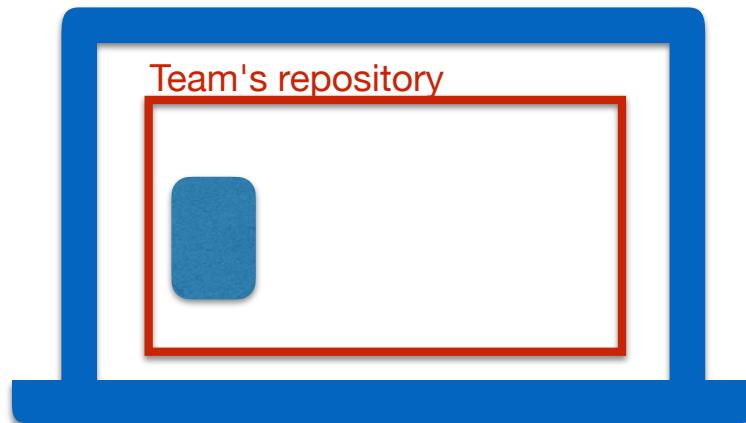
Commit to master

2. Adding a file



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User's computer



Team's repository



Team's repository



- the file is now committed to the local git repository
- it needs to be pushed to the remote repository on GitHub



Current Repository **hello-world** | Current Branch **master** | Push origin 1 ↑ Last fetched 30 minutes ago

Changes History 0 changed files

No local changes

You have no uncommitted changes in your repository! Here are some friendly suggestions for what to do next.

Push 1 commit to the origin remote
You have one local commit waiting to be pushed to GitHub
Always available in the toolbar when there are local commits waiting to be pushed or ⌘ P

Push origin

Open the repository in your external editor
Configure which editor you wish to use in [preferences](#)
Repository menu or ⌘ ↑ A

Open in Visual Studio Code

View the files in your repository in Finder
Repository menu or ⌘ ↑ F

Show in Finder

Open the repository page on GitHub in your browser
Repository menu or ⌘ ↑ G

View on GitHub

hd Summary (required)

Description

Commit to master

Committed just now Create my_markdown.Rmd Undo



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test repository

[Edit](#)

[Manage topics](#)

2 commits 1 branch 0 releases 1 contributor

Branch: master ▾ New pull request Create new file Upload files Find File Clone or download ▾

carlherrmann Create my_markdown.Rmd	Latest commit b2b0bdf 2 minutes ago
README.md	Initial commit 37 minutes ago
my_markdown.Rmd	Create my_markdown.Rmd 2 minutes ago

[README.md](#)

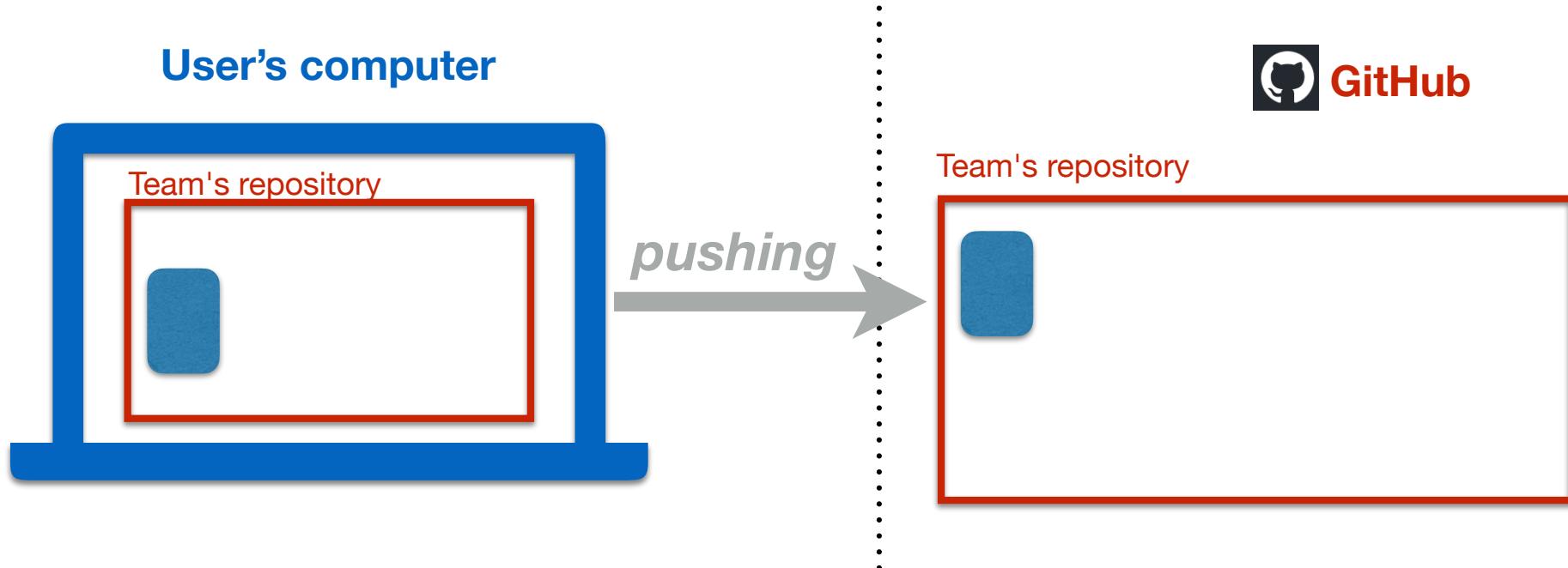
hello-world

test repository

Carl Herrmann

Health Data Science Unit - Medizinische Fakultät Heidelberg

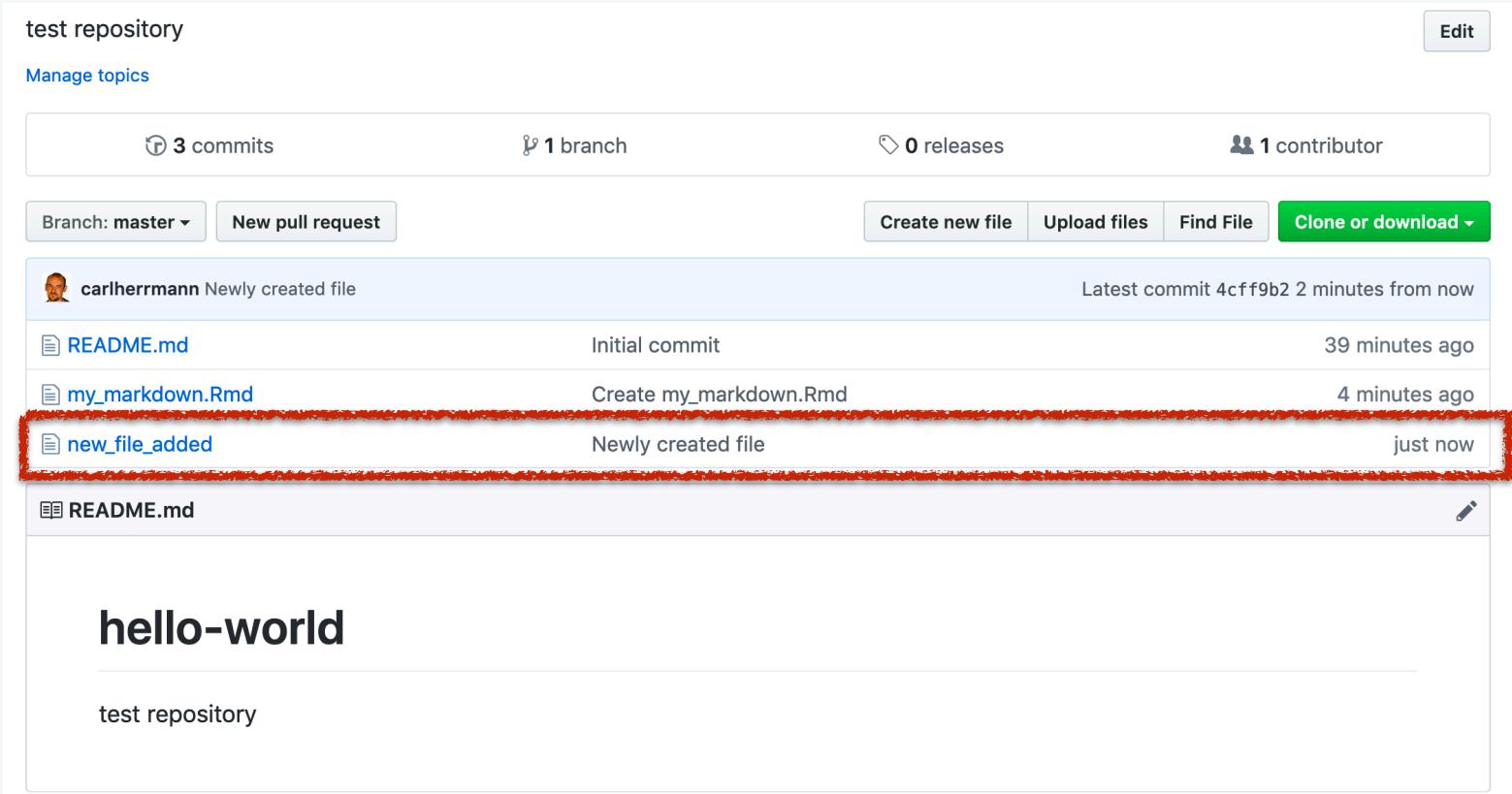
2. Adding a file



- the file is no committed to the local git repository
- it needs to be pushed to the remote repository on GitHub

3. Pulling from the remote repository

- Someone (probably one of your team mates) has added a new file into the remote repository
- It is not yet in your local repository and need to be **pulled**



test repository

Manage topics

3 commits 1 branch 0 releases 1 contributor

Branch: master ▾ New pull request Create new file Upload files Find File Clone or download ▾

carlherrmann Newly created file	Latest commit 4cff9b2 2 minutes from now
README.md	Initial commit 39 minutes ago
my_markdown.Rmd	Create my_markdown.Rmd 4 minutes ago
new_file_added	Newly created file just now

README.md

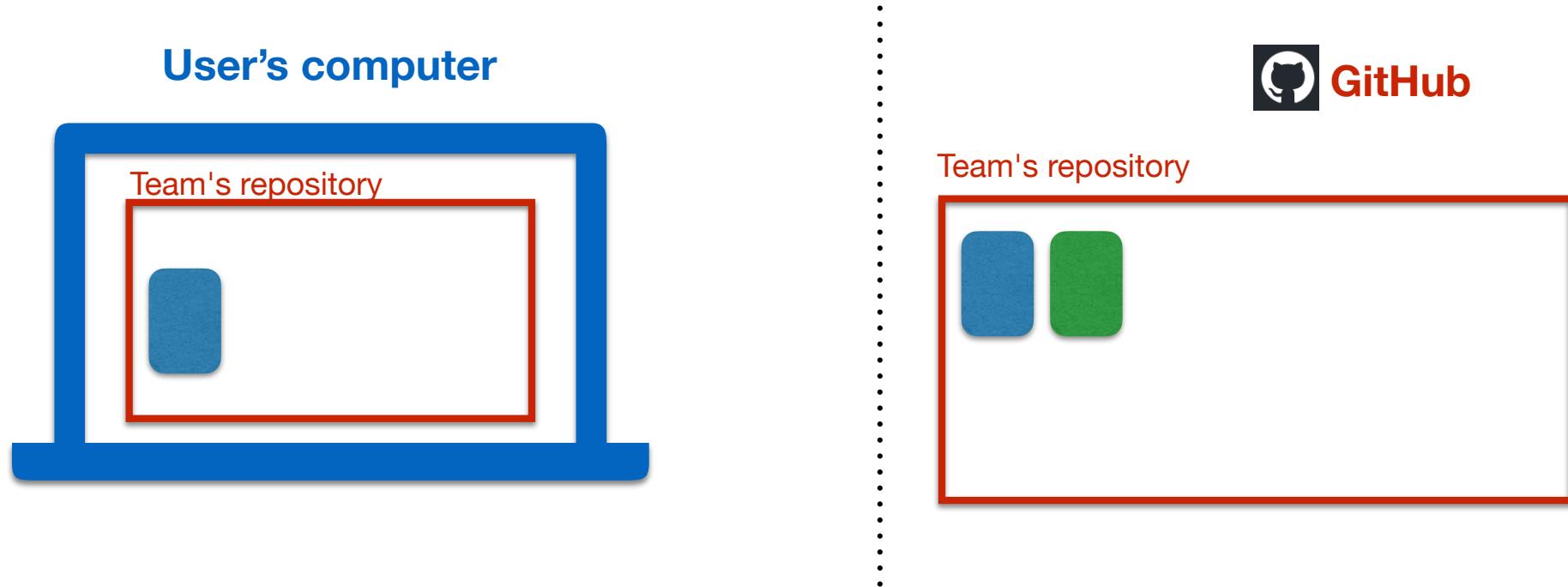
hello-world

test repository

3. Pulling from the remote repository



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lberg

Current Repository **hello-world**

Current Branch **master**

Fetch origin
Last fetched 4 minutes ago

Changes History

0 changed files

No local changes

You have no uncommitted changes in your repository! Here are some friendly suggestions for what to do next.

Open the repository in your external editor
Configure which editor you wish to use in [preferences](#)

Repository menu or ⌘ ⌉ A

Open in Visual Studio Code

View the files in your repository in Finder
Repository menu or ⌘ ⌉ F

Show in Finder

Open the repository page on GitHub in your browser
Repository menu or ⌘ ⌉ G

View on GitHub

hd Summary (required)

Description

++

Commit to master



Current Repository **hello-world**

Current Branch **master**

Pull origin
Last fetched just now

Changes History

0 changed files

No local changes

You have no uncommitted changes in your repository! Here are some friendly suggestions for what to do next.

Pull 1 commit from the origin remote
The current branch (master) has a commit on GitHub that does not exist on your machine.
Always available in the toolbar when there are remote changes or ⌘ ⌉ ⌊ P

Pull origin

Open the repository in your external editor
Configure which editor you wish to use in [preferences](#)
Repository menu or ⌘ ⌉ A

Open in Visual Studio Code

View the files in your repository in Finder
Repository menu or ⌘ ⌉ F

Show in Finder

Open the repository page on GitHub in your browser
Repository menu or ⌘ ⌉ G

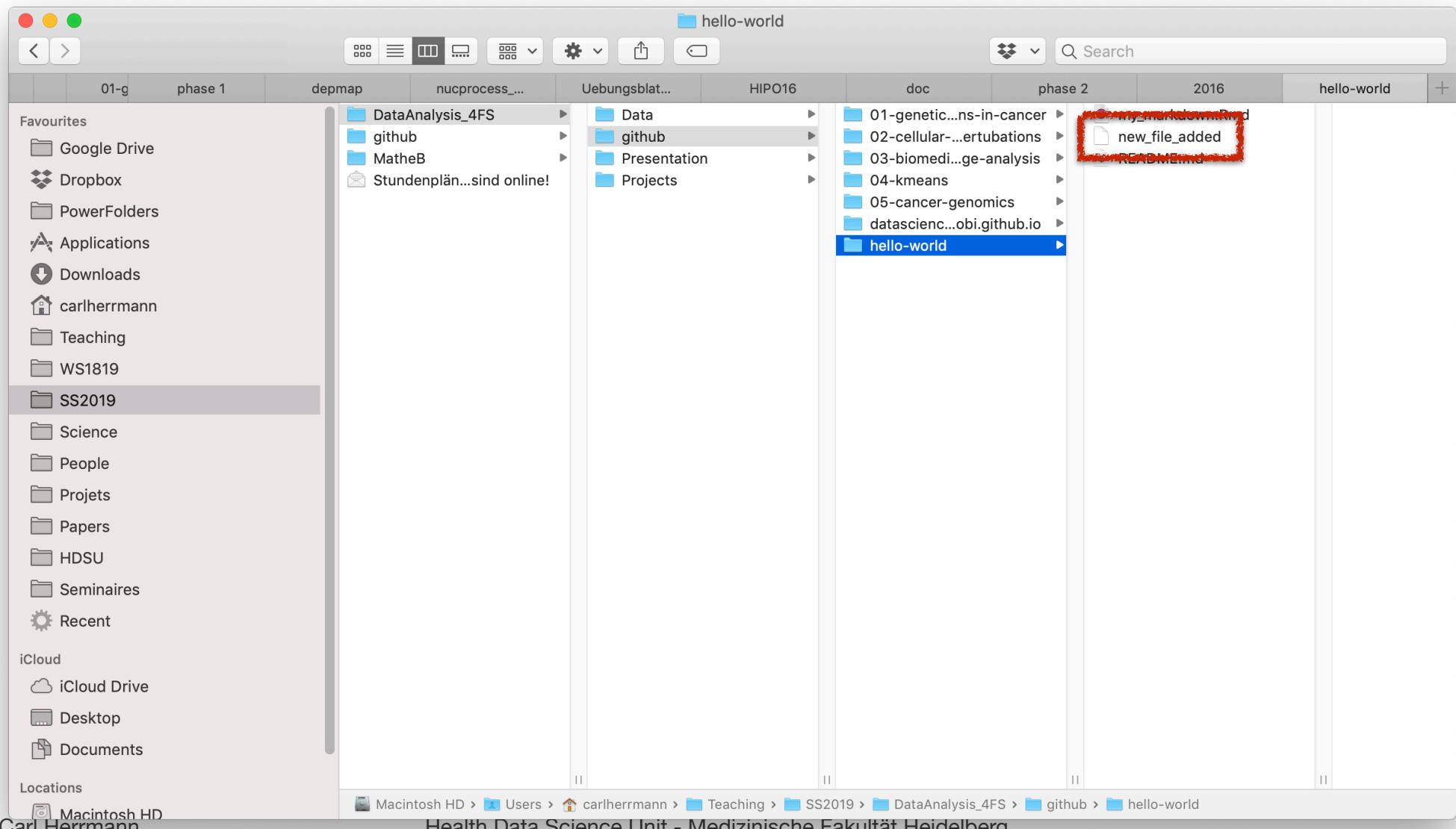
View on GitHub

hd Summary (required)

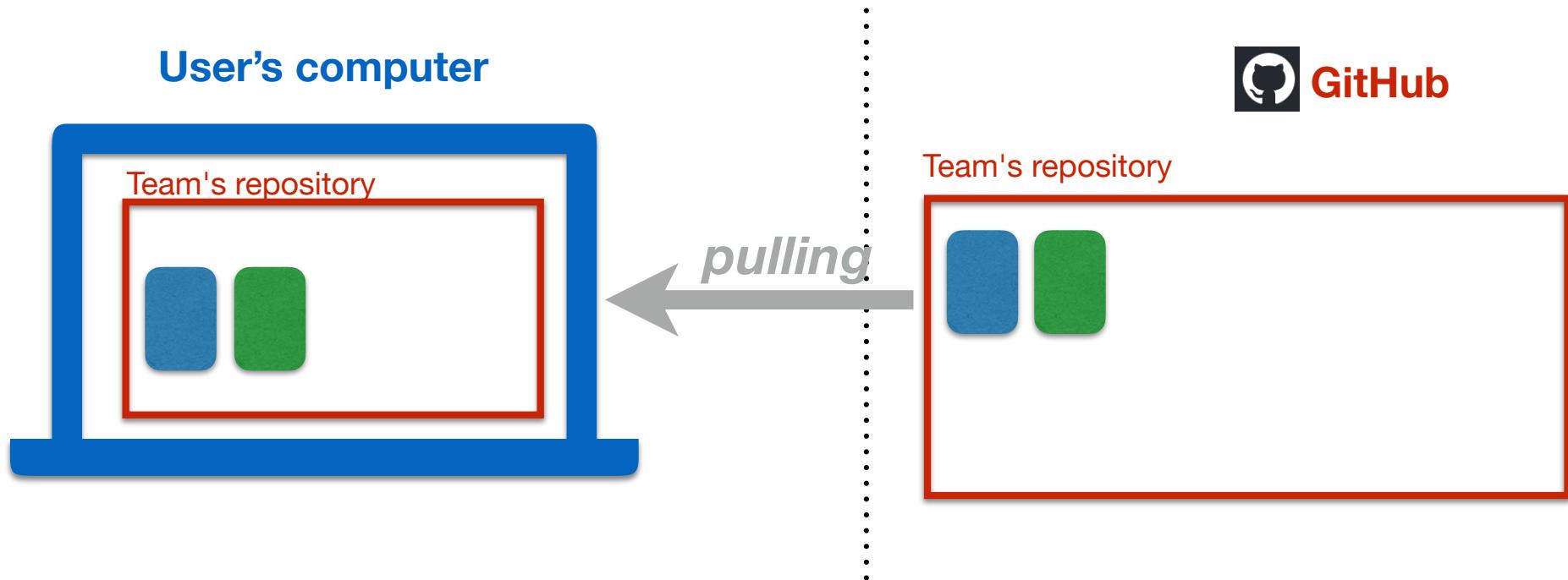
Description

Commit to **master**

- Once the remote repository is pulled, the new file(s) are available locally



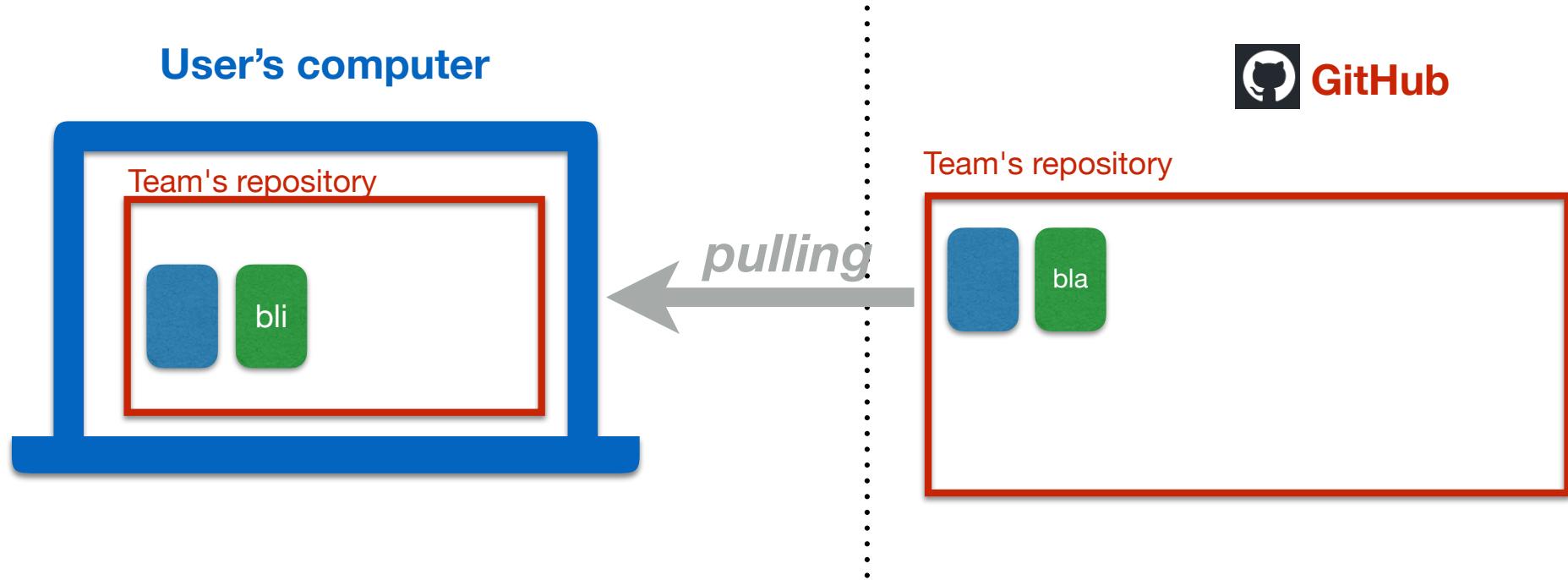
3. Pulling from the remote repository



4. conflicting changes



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Current Repository **hello-world**

Current Branch **master**

Push origin
Last fetched 33 minutes ago

Changes History

0 changed files

No local changes

You have no uncommitted changes in your repository! Here are some friendly suggestions for what to do next.

Newer Commits on Remote

⚠ Desktop is unable to push commits to this branch because there are commits on the remote that are not present on your local branch. Fetch these new commits before pushing in order to reconcile them with your local commits.

Fetch

Summary (required)

Description

View the files in your repository in Finder
Repository menu or ⌘ ⌘ F

Show in Finder

Open the repository page on GitHub in your browser
Repository menu or ⌘ ⌘ G

View on GitHub

Commit to **master**

Committed just now
Cool modification by Jane

Undo

A modal window titled "Newer Commits on Remote" is displayed, containing a warning message and a "Fetch" button. The background shows a GitHub desktop interface with a repository named "hello-world" and a "master" branch. The status bar at the top right indicates the last fetch was 33 minutes ago. The main area displays the message "No local changes".



Current Repository **hello-world** Current Branch **master** Pull origin
Last fetched just now

Changes 1 History new_file_added

1 changed file new_file_added

@@ -1,3 +1,7 @@
1 1 This is new file that is added to the remote repository.
2 2
3 3 -Awesome change by Jane! ↗↔
3 +<<<< HEAD

Resolve conflicts before merging **origin/master** into **master**

1 conflicted file

new_file_added 1 conflict

Open in Visual Studio Code

Open in command line, your tool of choice, or close to resolve manually.

Abort merge Commit merge

hd Update new_file_added

Description

Commit to master

Committed a minute ago
Cool modification by Jane

Undo

4. conflicting changes



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- Conflicting changes can be resolved with a text editor
- options depend on which editor is used

```
You, a few seconds ago | 2 authors (You and others)
This is new file that is added to the remote repository.

Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
<<<<< HEAD (Current Change)
Awesome change by Jane!
=====
This is a great new modification by Joe!
>>>>> af5e9c9981b21a39ed11d09f468bea576d669191 (Incoming Change)
```

local change

changes in the
remote file

To do



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- Create your own personal GitHub account
- Register your Github user name into the Google Sheet
- all team members will be added to the corresponding GitHub repo
 - Project 03 - Team 02 → **project-03-group-02**



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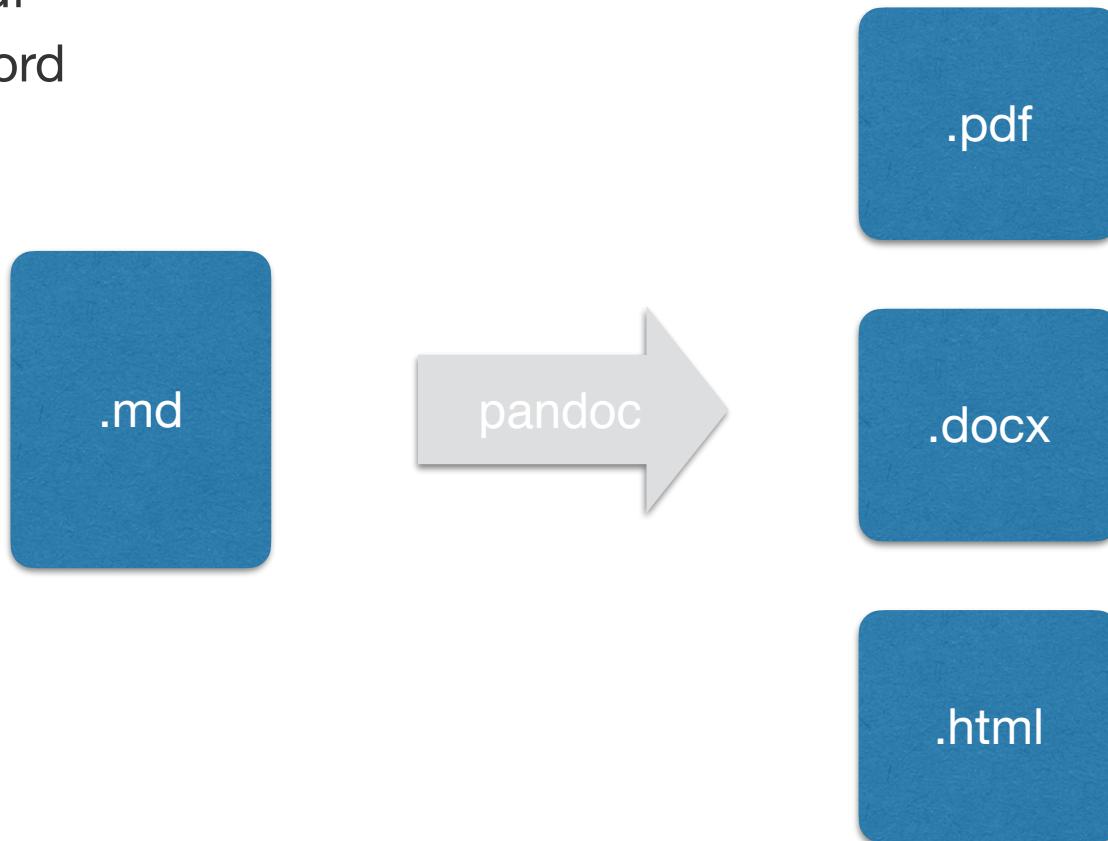
(R)markdown

Markdown



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- Markdown is a way to format plain text with a simple text editor
- Markdown documents can be converted with a **renderer** into
 - html
 - pdf
 - word



Rendering markdown



markdown

```
# My document

## this is a header

In the text we can *highlight* or put in **bold**.

## making lists

We can make **numbered lists**:

1. first item
2. second item

or unordered lists

* first item
* second item
  + subitem
  + subitem
* third item

This is `code` which can be put inline

```bash
this is bash code
```

```python
this is python code
```

```

pdf

My document

this is a header

In the text we can *highlight* or put in **bold**.

making lists

We can make **numbered lists**:

1. first item
2. second item

or unordered lists

- first item
- second item
- subitem
- subitem
- third item

This is code which can be put inline

this is bash code

this is python code

html

My document

this is a header

In the text we can *highlight* or put in **bold**.

making lists

We can make **numbered lists**:

1. first item
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or unordered lists

- first item
- second item
- subitem
- subitem
- third item

This is code which can be put inline

this is bash code

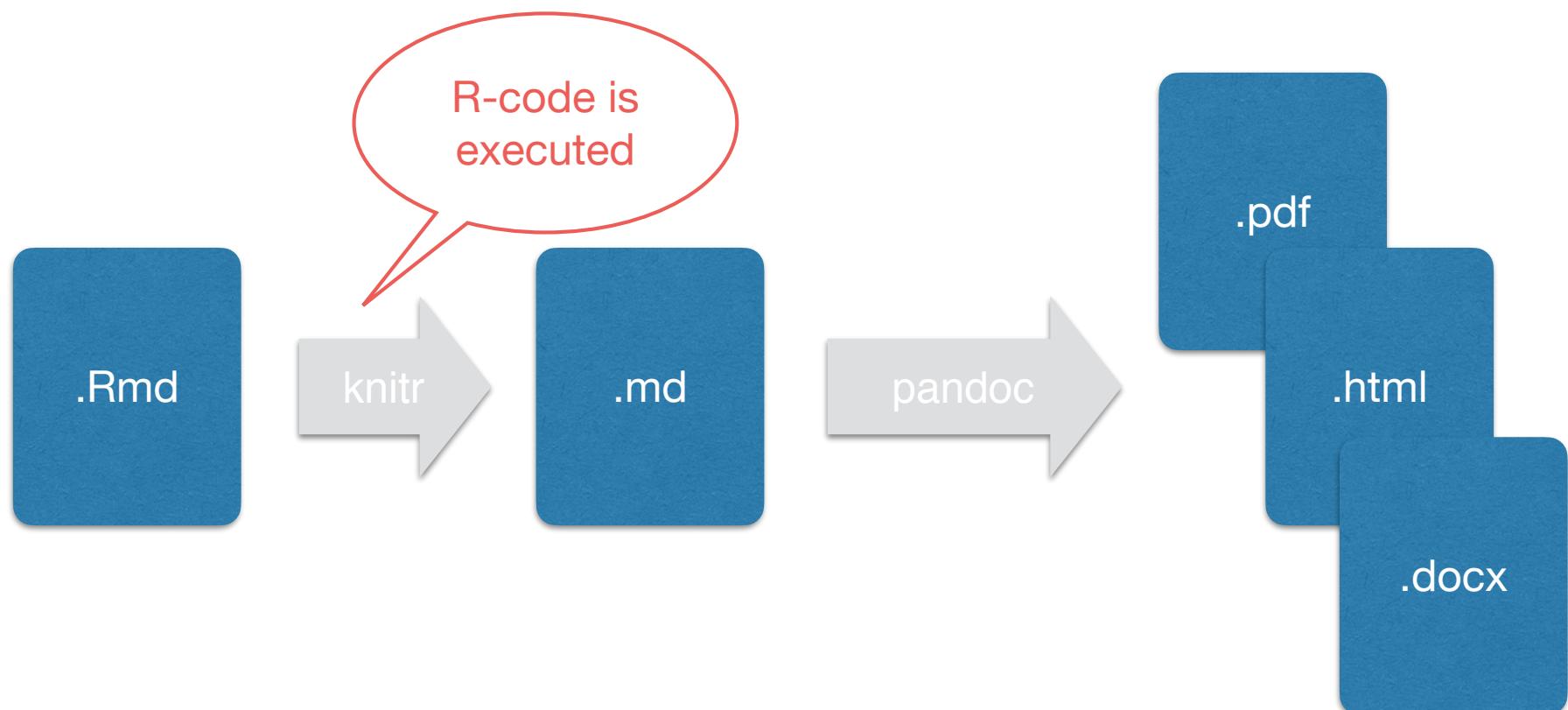
this is python code

Rmarkdown



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- With Rmarkdown, R-code parts can be included into the markdown document
- the R-code will be executed, the result integrated into markdown



Rmarkdown format



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```
---
```

```
title: "Project 01"
author: "Carl Herrmann"
date: "4/17/2019"
output:
  html_document:
    keep_md: yes
  pdf_document: default
---
```

```
# A Rmarkdown tutorial
```

This is a brief tutorial on how to use Rmarkdown to create dynamic documents

```
```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
knitr::opts_knit$set(root.dir='/Users/carlherrmann/Teaching/SS2019/DataAnalysis_4FS')
```
```

```
## Load the dataset
```

```
```{r read_data}
allDepMapData = readRDS('Data/depmap/DepMap19Q1_allData.RDS')
```
```

Now plot the distribution of the cell lines according to the tissue type

```
```{r plot_data}
freq = sort(table(allDepMapData$annotation$Primary.Disease))
par(las=2,mar=c(3,8,3,3));barplot(freq,horiz=TRUE, col='lightgrey')
```
```

header: set options

R code chunks

text in markdown

Rmarkdown chunk options



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- Display options can be set for each chunk individually, or for all chunks at the beginning of the document

```
```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
knitr::opts_chunk$set(cache = TRUE)
```

valid for all chunks

- echo=TRUE : R-code is displayed in final document
- cache = TRUE : results of all chunks are cached

```
```{r plot_data,fig.height=12,fig.width=12}
freq = sort(table(allDepMapData$annotation$Primary.Disease))
par(las=2,mar=c(3,8,3,3));barplot(freq,horiz=FALSE, col='lightgrey')
```
```

valid for **this** chunks

- set height and width of output figure

# Reference



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- <https://rmarkdown.rstudio.com/>
- <https://www.rstudio.com/wp-content/uploads/2016/03/rmarkdown-cheatsheet-2.0.pdf>
-